

**Applicant:**                 **Robert Larson,  
Horizon Unlimited**

**I.       Proposed Project:** Modification of the Victory Ranch project.

The Victory Ranch project encompasses 5,803 acres as indicated on the attached map labeled Victory Ranch Location Map. This area includes approximately 730 acres of the Provo River floodplain extending from the Provo River bridge on SR 32 upstream along State Route 32 and Lower River Road for approximately 5 miles. The upstream project boundary is near 1000 East in Francis, Utah. The project is located in Wasatch and Summit Counties, Utah.

The proposed development is a private recreational facility that will offer single family lots. Specific project components include the development of two golf courses with a clubhouse, 690 residential lots, a fishing tackle shop, an activities center, 6 camping huts, an equestrian center, the resort sales office, and roads and bridges to access these facilities. In addition, the applicant will complete a river restoration project in approximately one mile of the Provo River within the project area. Fishing trails will also be developed along the Provo River.

The description of the development has changed since the issuance of the Public Notice in December 2001 and the subsequent 404 authorization in June, 2004. The change removes the River golf course and adds single family homes in the area formerly proposed for the River golf course location. The revised plan reduces direct wetland fill impacts related to development from 2.29 acres to 1.0 acres. The impacts are for road crossings. Approximately half of the project's total road crossings are above the river valley and these were included in the original development plan. Another change is the construction of a road required by the Bureau of Reclamation (BOR) to access a rock quarry via a new bridge at the former Fitzgerald bridge location (this accounts for 0.12 acres of the total 1.0 acres). The number of home sites proposed within the river valley is a maximum of fifty. Each lot has a defined buildable area. None of the defined buildable areas are located within wetlands and none are within 100 feet of the Provo River channel high water mark.

The river restoration work for Victory Ranch will result in the discharge of fill material into 4.28 acres of wet meadow and forested wetlands in order to complete the river restoration portion of this project. The restoration effort includes the removal of roads, bridges and some existing dikes, the modification of the Weber River Canal alignment, bank stabilization features, new dikes, french drains, and side channels. In addition, the applicant will permanently fill 4.27 acres of open water in the Provo River channel in order to create dikes and 1.93 acres of wet meadow riparian wetland.

Portions of the project requiring authorization from the Corps of Engineers under Section 404 of the Clean Water Act include: (1) the permanent discharge of fill into approximately 1.0 acres of (a) wet meadow wetland, and (b) 5 perennial and 14 ephemeral drainages for the construction of roads throughout the development; (2) the construction of boardwalk trail that will permanently shade approximately 300 square feet (55 linear feet) of wet meadow wetlands and approximately 66 linear feet of 11 drainages; (3) the permanent discharge of fill into 0.19 acres of wet meadow wetland and forested riparian wetland for the modification of the Weber Canal; (4) the permanent conversion of 4.09 acres of wet meadow wetland to open water for ponds and a side channel associated with the river restoration; (5) the permanent discharge of fill into approximately 2.34 acres of the Provo River channel for dikes associated with channel restoration; (6) the permanent conversion of 1.93 acres of open water on the Provo River channel to 1.93 acres of riverine wetland; (7) the temporary discharge of fill material into wet meadow wetlands for the construction of 1300 linear feet of a utility line; and, (8) the temporary discharge of fill material into two perennial drainages and two ephemeral drainages for the construction of approximately 50 linear feet of utility lines.

Total project impacts to waters of the U.S. include the permanent loss of 5.28 acres of wet meadow, including less than 0.10 acres of forested riparian wetland; approximately 4.27 acres of stream and river bottom substrate; the temporary loss of 1800 linear feet of wet meadow wetland; and the permanent loss of 50 linear feet of two perennial and two ephemeral drainages.

In order to mitigate for the permanent loss of 1.0 acres of wet meadow wetland resulting from Victory Ranch development features, the permittee will create 4.0 acres of wet meadow wetland for preservation in perpetuity. In order to restore one mile of the Provo River, the applicant will modify existing conditions resulting in the permanent loss of 4.28 acres of wet meadow and forested wetland. This loss is offset by the anticipated conversion of 11.32 acres of upland to wet meadow and riparian forested wetland within the river floodplain. The permittee will create these wetlands in several locations. The applicant will further discharge fill material into 2.34 acres of river channel and permanently convert 1.93 acres of river channel to 1.93 acres of riverine wetland. These changes are offset by the construction of 10.54 acres of new open water features of constructed ponds and channels anticipated as a result of river restoration. The river restoration has been designed by a professional fluvial geomorphologist and will be implemented by construction crews experienced in river restoration techniques with oversight by the geomorphologist.

Please refer to the attached Table 2, entitled Impacts to Waters of the U.S., Modified Victory Ranch Project for a summary of impacts regulated under Section 404 and the mitigation proposed to compensate for those impacts.

## **II. Proposed Measures to Mitigate for Impacts to the Aquatic Environment**

### **Mitigation:**

1. A construction schedule shall be submitted to the Corps no less than 30 days before beginning construction activities for the river restoration, home construction within the river floodplain, fishing access trails, and the wetland mitigation site. In order to protect both threatened and sensitive riparian wildlife species and their habitat, the schedule shall include a map that identifies “sensitive areas and time periods” to be avoided during construction.

a. Sensitive areas shall include, but are not limited to, spotted frog habitat and inhabited areas, the Great Blue Heron rookery, riparian habitat along the Provo River below 6,600 feet in elevation, and Cottonwood trees within 50 feet of the river.

b. Sensitive time periods must include those between one hour before sunset and 9:00 am during the winter Bald Eagle roosting season (November through March). Construction work will be avoided during that time period in the river corridor area identified as that elevation below 6,600 feet. If on-site surveys determine that the Bald Eagle is not present, observance of the roosting season may be unnecessary. As voluntarily proposed by the applicant, sensitive time periods will also include the nesting season for migratory birds (mid-April through August) in which the removal of trees within the river corridor area identified as that elevation below 6,600 feet will be avoided. Special requests for construction during the month of May will be accepted provided the applicant uses protective measures approved by the Corps. If construction plans or the construction schedule are significantly modified to affect areas within the jurisdiction of this office, notice of these changes shall be sent to the Corps for review and approval.

2. In order to mitigate for the permanent loss of 1.0 acres of wet meadow wetland resulting from Victory Ranch development features, the permittee shall create 4.0 acres of wet meadow wetlands. Mitigation at a 4:1 ratio was voluntarily proposed by the permittee. The permittee shall also develop a final **comprehensive mitigation and monitoring plan** to be approved by the Army Corps of Engineers prior to the discharge of fill material into waters of the U.S., including wetlands. The plan shall include mitigation location, design drawings and goals, vegetation plans, including target species to be planted, and final success criteria, presented in the format of the Sacramento District’s Habitat Mitigation and Monitoring Proposal Guidelines, dated December 24, 2004. The content of the plan should also include those features included in Regulatory Guidance Letter 2-02. The purpose of

this requirement is to ensure replacement of functions and values of the aquatic environment that would be lost through project implementation.

3. To ensure success of the mitigation area, the permittee shall monitor the site for 5 years or until the success criteria described in the approved mitigation plan are met. This period shall begin upon completion of the construction of the mitigation wetlands.
4. The permittee shall submit monitoring reports to the Corps by November 30 for each year of the monitoring period.
5. The permittee shall construct the compensatory mitigation prescribed by this plan prior to, or concurrently with, the discharge of fill material into waters of the U.S., including wetlands.
6. To ensure that mitigation is completed as required, the permittee shall notify the District Engineer of the start date and the completion date of the compensatory mitigation construction, in writing and no later than 10 calendar days prior to each date.
7. To provide a permanent record of the completed compensatory mitigation work, the permittee shall provide one complete set of as-builts of the completed mitigation to the District Engineer. The as-builts shall indicate changes made from the original plans in indelible red ink. These as-builts shall be provided to this office no later than 60 days after the completion of construction of the mitigation area wetlands.

**Preservation of Mitigation Area:**

8. To protect the integrity of the 4.0 acre wetland mitigation area, no new roads, utility lines, benches, equipment or fuel storage, grading, firebreaks, mowing, planting, disking, pesticide use, beaver control, burning, snow storage, or other structures or activities shall be constructed or occur within the mitigation area without specific, advance written approval from the Corps of Engineers.
9. In order to ensure the long-term viability of the mitigation area, the permittee shall complete the following activities prior to disturbance to waters of the U.S., including wetlands:
  - a. Designate an appropriate conservation-oriented third party entity to function as manager of the mitigation area and to hold the required conservation easement;
  - b. Establish a fully-funded endowment to provide for maintenance and monitoring of the mitigation area;
  - c. Record a permanent conservation easement and deed restrictions (template attached) maintaining the mitigation area as wetland preserve and wildlife habitat in perpetuity. Copies of the proposed deed restriction and conservation easement language shall be provided to the Corps of Engineers for approval prior to recordation.
  - d. Provide copies of the recorded documents to the Corps of Engineers.

**Minimization measures:**

10. Prior to the start of any project construction, limits of disturbance shall be established to ensure that construction activities do not disturb waters of the U.S. not authorized for filling or excavation by this permit. The limits of disturbance shall be clearly marked with brightly colored barrier fencing and/or silt fencing located 20 feet from waters of the U.S. throughout the river valley and at the permitted road and utility crossings. In the event that it is impossible to meet the 20 foot requirement, the location of the fencing shall be noted and provided in writing to the Corps. At the permitted road and utility crossings, protective silt fencing shall also be placed at the boundaries of the waters adjacent to construction activities.

11. To ensure the adequate construction of road crossings over perennial streams, the permittee shall submit designs for these road crossings 30 days prior to their construction for Corps approval. Specifically, plan view and cross section designs for road crossings of five perennial streams as indicated on the attached map labeled Sheet No. 3 shall be submitted. Best Management Practices for Work in Utah Streams (August, 2003) shall be used where applicable.
12. A contact person, responsible for field supervision and quality control, shall be designated prior to any earth work to oversee permit compliance for this project including erosion control, channel work, revegetation and all mitigation. The name, address, and phone number(s) of this person shall be provided to this office prior to construction.
13. The document entitled Best Management Practices for Work in Utah Streams (August, 2003) shall be used, where applicable, where stream alteration work will be performed throughout the Victory Ranch development.
14. Best Management Practices will be used where temporary discharges of fill material to waters of the U.S., including wetlands, will occur. Examples of such practices include, but are not limited to, the use of trench plugs where utility lines cross wetlands, rubber matting in wetland areas where heavy equipment may cross, silt fencing at construction boundaries, and the revegetation of all disturbed areas with wetland species native to the project location.

#### **Threatened and Endangered Species Avoidance:**

15. Within winter Bald Eagle roosting areas, construction should not begin before 9 am and should conclude at least one hour prior to sunset. Winter is defined as the months of November - March. If on-site surveys determine that the Bald Eagle is not present, observance of the roosting season may be unnecessary.

#### **General Wildlife Impact Minimization:**

16. As proposed by the applicant, the permittee shall designate a buffer around the Great Blue Heron rookery in the upper Provo river reach in order to minimize its disturbance. Within this buffer, there shall be no construction of trails or river access points for fishermen.

#### **Spotted Frog (*Rana luteiventris*) Measures:**

17. The DWR has voluntarily committed to perform annual surveys for egg masses within the project area. The applicant shall allow access and cooperate with the DWR in support of the survey work.
18. In order to preserve existing spotted frog habitat, the permittee has voluntarily committed to leave intact existing beaver dams within the river restoration project area and the Lady Long Hollow drainage.
19. The permittee will follow the construction guidelines provided in the Protocol for Avoiding and Minimizing Impacts to Columbia Spotted Frog. In compliance with the protocol, the DWR will conduct sweeps through the wetlands to be impacted prior to construction in order to ensure that no spotted frogs are present.
20. In order to ensure that existing and future spotted frog populations are protected from predation by western mosquitofish (*Gambusia affinis*), the permittee shall at no time introduce this species to any water located within the Victory Ranch development.

#### **River Restoration and Trails:**

21. Each phase of the final construction plans for the river restoration project shall be submitted to the Corps of Engineers for review and approval prior to the initiation of its construction. The review process will include

disbursement of the plans to the U.S. Fish and Wildlife Service and the Division of Wildlife Resources and will not extend beyond 30 days.

22. River restoration work shall begin before or concurrently with disturbance of wetlands authorized for impact under Section 404 of the Clean Water Act.

23. Final trail construction plans, including stream and wetland crossing plan views and cross sections, will be submitted to the Corps of Engineers for review and approval prior to project construction. The review process will include disbursement of the plans to the U.S. Fish and Wildlife Service and the Division of Wildlife Resources and will not extend beyond 45 days.

#### **Water Quality Certification:**

24. The State of Utah Department of Environmental Quality, Division of Water Quality authorized a Water Quality Certificate for this project on January 14, 2002 with special conditions. These conditions are as follows:

a. Whenever an applicant causes the water turbidity in an adjacent surface water to increase 10 NTU's or more, the applicant shall notify the Utah Division of Water Quality.

b. Whenever an applicant causes the Total Suspended Solids concentration in an adjacent surface water to exceed 35 mg/l (Class 3A - Cold Water Fisher) or 90 mg/l (class 3B-Warm Water Fishery) the applicant shall notify the Division of Water Quality and submit calculations indicating the load contribution expressed in pounds per day as Total Suspended Solids.

c. Applicant shall protect any potentially affected fish spawning areas.

### **III. Physical/chemical characteristics and anticipated changes**

**Substrate:** The construction of the riverside residential lots, boardwalk trails, and road crossings within the development requires the permanent discharge of earth and gravel fill into 1.0 acres of seasonally grazed wet meadow wetland. The applicant will minimize impacts to wet meadow wetland substrate by implementing the use of appropriate Best Management Practices. These measures include the implementation of construction fencing to limit areas of disturbance and silt fencing to limit the extent of fill as indicated in Mitigation Measure 10. The applicant will mitigate for the loss of 1.0 acre of wet meadow wetland substrate by creating 4.0 acres of flooded wet meadow within the upper river preservation area as indicated in Mitigation Measure Two.

The construction of culverts at 5 perennial and 14 ephemeral drainage road crossings will require the permanent placement of earth and gravel fill within these drainages. The construction of boardwalk will permanently shade approximately 66 linear feet of 11 drainages. The applicant will employ Best Management Practices as described in Mitigation Measures 10 through 15 in order to minimize impacts.

The restoration and stabilization of one mile of the Provo River requires the permanent discharge of fill material into 0.19 acres of wet meadow and riparian forested wetland in order to modify the Weber Canal, and the permanent conversion of 4.09 acres of wet meadow wetland into open flowing water and ponds. River restoration of a system such as the upper Provo River normally results in a positive change for river function including water quality, geomorphology, and wildlife habitat. However, there will be no net loss of wetlands because the restoration will create approximately 11.3 acres of wet meadow and riparian forested wetlands. The restoration work also requires the discharge of fill material into 2.34 acres of open water to create dikes and the conversion of 1.93 acres of open water (Provo River channel) into wet meadow wetlands. The applicant will create approximately 10.54 acres of new channel. In order to ensure adequate review of the river restoration proposal, Special Condition 28 requires that the applicant submit final construction plans to the Corps prior to river restoration construction.

For construction of project utility lines, the applicant will employ appropriate Best Management Practices to minimize impacts to 1800 square feet of wet meadow wetland and 50 linear feet of 4 perennial/ephemeral drainages as required by Special Conditions 10 through 15.

In summary, it is expected that the temporary and permanent impacts to wetland and/or stream substrate as a result of the discharge of fill material will be moderate in significance. The applicant will employ Best Management Practices where appropriate to minimize temporary and permanent disturbances. The applicant will mitigate for the permanent loss of 1.0 acres of wet meadow by creating 4.0 acres of wet meadow wetlands within the Provo River drainage upstream of the Victory Ranch riverine residential area. Although it will impact 4.28 acres of wet meadow and riparian forested wetlands, the river restoration will also create 11.3 acres of wet meadow and riparian forested wetlands. Although it will fill approximately 4.27 acres of open water within the Provo River channel, the project will create an additional 10.54 acres of new open water channel.

**Currents, circulation or drainage patterns:** The construction of the home sites will not affect currents, circulation or drainage patterns. The construction of roads within the development will have a temporary and minor effect on drainage patterns. The applicant will install culverts that will be sized to pass normal high flows and will employ other Best Management Practices to ensure minimal disturbance to these patterns.

Flow patterns of the Provo River will permanently change because the applicant will create new side channels to reduce velocities in the main channel, provide flood flow channels, and reconnect the river with its floodplain by eliminating dikes. These changes are desirable because the river channel currently experiences spring peak flows in excess of historical discharges. Construction of the Duchesne River tunnel in 1953 facilitated the augmentation of the Provo River with flows from the Duchesne river. The Weber Canal also augments Provo River flows. As a result, the Provo River channel requires annual maintenance including the construction of dikes and the dredging of the channel in order to facilitate the flows and sediment transported through the system. The proposed river restoration will eliminate the need for these annual maintenance activities and improve the ability of the river to handle the excess Duchesne River flows. It will relocate the Weber Canal outlet one mile downstream of its existing location which will reduce excess high flows in the reach above the outlet.

The river restoration work will temporarily affect currents, circulation and drainage patterns as heavy machinery will be reconstructing channel features for improved river function. The applicant will implement Best Management Practices to offset increased sedimentation resulting from modified currents or circulation patterns.

In order to facilitate the river restoration and stabilization portion of the project, it will be necessary to temporarily block channel flows and reroute the river. These blocks will be temporary and the applicant will use appropriate BMPs in order to minimize sedimentation. Therefore, the impacts will be only moderate in significance.

Anticipated permanent and temporary changes to currents, circulation or drainage patterns are expected to be moderate in significance. The change in these patterns will be beneficial to the river channel in the restored reach and will not change patterns downstream of development.

**Suspended particulates; turbidity:** The construction of the home sites and associated roads should not temporarily or permanently affect the level of suspended particulates in adjacent open water beyond a limited degree because the applicant will establish limits of disturbance and construct silt fencing to minimize the introduction of disturbed soils into the river as required in Special Condition 10.

The majority of the project structure is located outside of riparian areas and runoff will be directed through detention areas before entering riparian zones and natural channels.

Because the river restoration will relocate the Weber Canal outlet one mile downstream of its existing location on the Provo River, the work will permanently reduce sediment transport within the restored one mile reach of the Provo River. During its construction, it is likely that the levels of suspended particulates and turbidity will increase temporarily due to in-stream channel work. In order to minimize this effect, the applicant will work during low

flow periods and implement silt fencing where appropriate within the project area. Because the river restoration will reestablish hydrological connectivity between the river and its floodplain and because grazing will be eliminated within the floodplain, riparian vegetation will reestablish. Therefore, sediment retention functions will be restored long term and future flood events will introduce less sediment to the river to cause turbidity.

In summary, the implementation of the modified project will have a moderate and temporary adverse effect on suspended particulates and turbidity within the Provo River. The applicant will implement BMPs as described previously to minimize temporary increases in suspended particulates and turbidity. In the long term, suspended particulates and turbidity levels within one mile of the Provo River will be improved as a result of project completion.

**Water quality (temperature, salinity patterns and other parameters):**

**Nutrients and Pesticides:** The river valley lots have defined areas within which disturbance is allowed for construction and landscaping. All of these areas are at least 100 feet from the Provo River. Also, the community codes, covenants and restrictions (CC&Rs) will specify that herbicides and pesticides are not to be used outside of the defined areas of disturbance for each lot. To minimize potential salinity impacts the applicant has agreed to a winter road maintenance practice using sand rather than salt on roads within the river valley.

**Septic:** The Victory Ranch project will introduce sewer lines to an area that previously relied on septic systems. It is likely that existing dwellings within the immediate vicinity of the project area, but outside project boundaries, will abandon septic systems and utilize the new sewer lines. This decrease in septic use will improve water quality in the Provo River.

Currently, the wet meadow wetlands within the river valley are grazed by cattle. Grazing will no longer occur as a result of the change in land use and it is likely that excess sources of nitrogen as a result of cattle grazing will be eliminated.

Changes to water quality as a result of the modified project are expected to be minimal and predominantly beneficial. Existing water quality is degraded because of cattle grazing, septic use in the area, and the lack of riparian vegetation surrounding the Provo River. Cattle grazing and possibly, septic use, will be eliminated and riparian vegetation will be restored as a result of the river enhancement project.

**Surface runoff and erosion:** The construction of homes and associated roads within the river floodplain will result in an increase of 12.88 acres of impervious surfaces. Within the river valley where topography is relatively flat, the goal of runoff management is to spread surface water rather than concentrate flows. Therefore, road runoff will sheet flow onto adjacent vegetated areas with no ditches or detention basins concentrating the water. No runoff in the river valley will be collected or conveyed into wetlands or water ways. In steeper areas above the river valley ditches and detention basins are designed to capture surface water where needed to minimize erosion.

**Flood control functions:** It is not expected that the installation of culverts into 5 perennial, and 14 ephemeral, drainages will affect flood control functions. Culverts will be designed to allow uninhibited expected high flows.

The construction of the houses and associated roads within the floodplain will introduce 12.88 acres of impermeable surfaces to the floodplain of the Provo River. It will also eliminate 1.0 acre of floodplain wetlands. However, existing conditions are such that the Provo River has minimal hydrological connection to its floodplain due to the presence of dikes. The applicant has designed the development and river restoration to facilitate overbank flooding outside of developed areas. The elevations of home sites will be above the calculated 100 year floodplain elevation and none of the home sites are within 100 feet of the river. Therefore, the impact of the proposed project to flood control functions will be minimal and may in fact improve flood control functions within the restored one mile reach and for a short distance downstream.

The Provo River is currently augmented with flow from two sources: the Duchesne Tunnel upstream of the project location and the Weber Canal within the project area. Flows within the Provo are therefore significantly higher than what the river channel can contain. In order to retain these augmented flows within the river channel, the Bureau of Reclamation (BOR) built dikes along the river edge. In addition, the BOR and the Provo River Water Users Association (PRWUA) implement yearly efforts to realign and enlarge the channel.

The project proposes to eliminate the majority of dikes and rebuild the channel so that connectivity with its floodplain is permanently restored within the one-mile reach proposed for restoration. This action will promote the spread of flood flows across the floodplain and will permanently reduce the amount of bed scour and erosion that currently occurs as a result of the dikes. Overbank flooding will only occur within the restored reach and downstream flows will remain in the existing channels.

**Storm, wave and erosion buffers:** The construction of the roads and houses within the river floodplain will result in the permanent conversion of 12.9 acres of upland and wet meadow wetland vegetation to impervious surfaces, although a buffer of varying width will exist between the development features and the river. The buffer will consist of native riparian vegetation. The loss of grazed wet meadow vegetation buffer is moderate in significance and will be mitigated by the preservation of an ungrazed native riparian buffer between the home sites and the river. The one mile reach of river restoration will also create a buffer of native riparian vegetation that will remain ungrazed as well. Specifically, the removal of grazing within the river valley will induce the permanent recovery of riparian vegetation such as willows and alders. This vegetation provides greater bank protection than herbaceous species and will therefore increase the effectiveness of erosion buffers along the Provo River.

**Erosion and accretion patterns:** During construction, the project site will experience increased erosion because of associated soil disturbance and the temporary loss of vegetation. It is expected that this effect will be temporary and will be mitigated by the long term benefits incurred by the removal of grazing and the restoration of riparian vegetation along the Provo River.

The installation of culverts within 5 perennial and 14 ephemeral drainages will have a temporary and minor adverse impact on erosion and accretion patterns during the construction period. The applicant will employ BMPs such as silt fencing to minimize this effect.

In order to contain both the flows of the Provo and the Duchesne River, the Provo River Water Users Association and its constituents have historically constructed dikes along the upper Provo River. These dikes concentrate streamflow and promote downcutting of the river bed. In order to minimize such downcutting of the river bed, the project will remove dikes and introduce channel geometry that will increase the ability of the river to reduce channel eroding velocities.

Currently, the Weber River delivers water (1000 cfs) to the Provo channel at a point approximately 2.5 miles upstream of Jordanelle State Park at Rock Cliff. Therefore, between this point and the State Park, water flows from three sources (Provo, Duchesne and the Weber Rivers). That water has historically transported a large amount of sediment and delivered it to the State Park. The Park is located in an area that is topographically similar to a delta and the Park has experienced excessive sedimentation within its boundaries since its construction. The river restoration project will relocate the Weber/Provo confluence approximately one mile downstream of its current location. The confluence will still remain above the Park, however because the relocation will eliminate 1000 cfs from the Provo channel, that one mile reach will transport less sediment than it once did. As a result, the Park will experience less sediment delivery and accumulation within its property. Where the new confluence is constructed, 1000 cfs will be added to the existing flows. It is anticipated that because of the nature of the channel at this point (excessively hardened by bedrock), vertical or lateral scour will be avoided. Further downstream, the river may experience some local downcutting, but the effect will be minimal because the base level of the river is maintained at a constant level in Jordanelle Reservoir approximately 2 miles downstream.

**Aquifer recharge:** It is expected that the temporary and permanent effects to aquifer recharge as a result of the river valley development and culvert installations will be minor. There will be an increase (+12.88 acres) in impermeable surfaces but these surfaces are small compared to the available open space over the entire project area.



The discharge of fill into 1.0 acre of wet meadow wetlands will be mitigated by the creation of 4.0 acres of wet meadow wetland 1/2 mile upstream of the impacted wetlands.

As a result of the river restoration, high flows within the Provo River will be permanently distributed across the floodplain instead of channelized within the river. This will result in an increased opportunity for aquifer recharge as water will be maintained on site for longer periods of time.

The residential areas of the property will be developed at low density. Therefore, the effect of impervious surfaces on aquifer recharge will be less than if the site was developed at high density.

**Baseflow:** Some wetlands that may have historically contributed to base flow during times of low flow will be filled as a result of this project. Some surface water will reach the river through direct run-off, and slower wetland discharge to the channel will be eliminated over 1.0 acre. The river restoration will create additional wet meadow wetlands adjacent to the Provo River that may contribute to baseflow once constructed. Therefore, it is unlikely that the project will more than minimally affect baseflow in the Provo River.

**Mixing zone, in light of the depth of water at the disposal site; current velocity, direction and variability at the disposal site; degree of turbulence; water column stratification discharge vessel speed and direction; rate of discharges per unit of time; and any other relevant factors affecting rates and patterns of mixing:**

It is not expected that the construction of the housing and associated roads will create a mixing zone within the Provo River because there will be no direct discharge of fill material into open water for these facilities.

The river restoration portion of the project will discharge fill material into sections of the Provo River and create a turbid mixing zone. This effect will be temporary, localized and moderate in significance.

The concept of mixing zone does not apply to discharge into wetlands, as there is no standing water in the wetlands that will be impacted.

#### **IV. Biological characteristics and anticipated changes (check applicable blocks and provide concise description of impacts):**

**Special aquatic sites (wetlands, mudflats, coral reefs, pool and riffle areas, vegetated shallows, sanctuaries and refuges, as defined in 40 CFR 230.40-45):** The project will permanently fill approximately 1.0 acre of palustrine emergent seasonally and semi-permanently flooded wet meadow wetlands in order to construct houses, associated roads, and trails. Vegetation associated with palustrine emergent seasonally flooded areas includes sedges, rushes, spreading bentgrass and reed canary grass. Vegetation associated with palustrine emergent semi-permanently flooded wetlands includes cattails, sedges, rushes, pondweed, watercress and limited willow cover. The permittee will mitigate for direct losses by creating 4 acres of seasonally saturated wetlands and some permanently saturated wetlands upstream of the project site. Typical vegetation will include *Carex nebrascensis* (Nebraska sedge), *Carex rostrata* (Beaked sedge), and *Deschampsia caespitosa* (Tufted hairgrass).

In order to complete the river restoration, the applicant will discharge fill material into 0.19 acres of wet meadow wetland and riparian forested wetland and will convert approximately 4.09 acres of palustrine emergent and semi-permanently flooded wet meadow wetlands into open water. The river restoration project will create 11.3 acres of both wet meadow wetland and riparian forested wetlands. The wet meadow wetlands will be revegetated with *Carex nebrascensis* (Nebraska sedge), *Carex rostrata* (Beaked sedge), and *Deschampsia caespitosa* (Tufted hairgrass). The riparian forested wetlands will be revegetated manually with a variety of native species including *Alnus incana* (Thinleaf alder), *Betula occidentalis* (Water birch), and *Salix lutea* (Yellow willow) and will voluntarily revegetate with *Populus angustifolia* (Narrowleaf Cottonwood).

Finally, the project will temporarily disturb 1800 square feet of wet meadow wetland for the construction of project utility lines. The applicant will follow Best Management Practices to ensure that impacts are minimal and temporary.

The river restoration will permanently destroy a minimal number of riffle/pool complexes within the one mile stretch of the Provo River scheduled for stabilization. One of the goals of restoration is the creation of fish habitat including riffle/pool complexes. It is expected that the impacts to the few existing complexes will be permanently mitigated through the restoration of several more of these complexes in different locations.

In summary, total direct and permanent impacts to 1.0 acre of wet meadow wetlands will be mitigated by the creation of 4.0 acres of the same wetland type on-site approximately 1/2 mile upstream of the impacted wetlands. Wetland losses that result from the river restoration project will be recaptured on-site and in-kind. Losses of riffle/pool complexes as a result of the river restoration will be recaptured in-kind and on-site.

**Habitat for fish and other aquatic organisms:** Project construction will result in the direct fill of aquatic open water habitat for fish and wetland habitat for other organisms. The direct placement of fill material into open water for river restoration will be compensated by the creation of additional open water and an improved channel function. The direct placement of fill material into wetland habitat will be mitigated with the creation of 4.0 acres of wet meadow wetlands.

The construction of the river restoration project will have a temporary and moderately adverse effect on fish habitat. It is expected that these effects will be mitigated by the long-term increase in quality of fish habitat. As a result of improved floodplain connectivity and revegetation efforts, riparian vegetation will increase and improve in quantity and diversity which will result in more cover for fish. In addition, riffle and pool habitat will be restored and improved within the one mile reach proposed for river restoration.

Spotted frog (*Rana luteiventris*) populations and habitat exist within the project area in several locations. Construction of the development features has been designed to avoid these areas and to keep runoff away from frog habitat. Spotted frog habitat on the property is expected to increase because a goal of the river restoration work is to create additional spotted frog habitat, particularly in areas where there will be limited human disturbance. Specifically, the river restoration project will create 1.92 acres of new ponds designed for spotted frog habitat. The removal of grazing from the project area is also expected to improve spotted frog habitat. In order to ensure that the project will not result in detrimental impacts to the spotted frog, the applicant will coordinate with the Division of Wildlife Resources to conduct population surveys after the project is complete to document changes in population and distribution. These surveys will be compared to surveys currently held by the Division of Wildlife Resources (DWR). If the surveys indicate a change detrimental to the spotted frog, the applicant will work with the DWR to address these changes. Therefore, it is expected that the adverse impacts to spotted frog habitat as a result of this project will be temporary and the permanent impact to spotted frog will be beneficial.

In summary, the project will have a minor adverse effect on habitat for fish and aquatic organisms. This effect will be mitigated by the creation of 23.41 acres of new habitat within the floodplain of the Provo River. In addition, the quantity and quality of riparian vegetation cover for fish will improve as well as riffle and pool habitat. The removal of grazing will improve spotted frog habitat and also contribute to the increase in quantity and quality of riparian vegetation.

**Wildlife habitat (breeding, cover, food, travel, general):** In order to determine the effect of this project on avian species, the applicant voluntarily contracted to survey breeding bird populations and habitat. The majority of bird species found in the Provo River floodplain are neotropical migratory songbirds that nest in riparian woodlands, for example Yellow Warbler (*Dendroica petechia*), Black-headed Grosbeak (*Pheucticus melanocephalus*), Swainson's Thrush (*Catharus ustulatus*), and Warbling Vireo (*Vireo gilvus*). Habitat for these species within the project area is currently poor as a result of cattle grazing. It is expected that the proposed project will permanently improve migratory songbird habitat because it will remove cattle grazing and therefore promote the re-establishment of shrub and woody vegetation. The applicant has agreed to restrict construction work during the nesting season for migratory birds as indicated in Mitigation Measures 1b. Therefore, it is expected that the

adverse effect of this project on neotropical migratory songbirds will be temporary and minimal. Completion of the work will benefit neotropical migratory songbirds by permanently removing cattle grazing. It will avoid impacts to neotropical migratory songbirds by restricting construction periods to avoid nesting season.

The document entitled Breeding Bird Populations of the Provo River Corridor on Victory Ranch, Utah discussed the impact of the project on the Golden Eagle (*Aquila chrysaetos*), Bald Eagle (*Haliaeetus leucocephalus*), Great Blue Heron (*Ardea herodias*), Sandhill Crane (*Grus canadensis*), Red-tailed Hawk (*Buteo jamaicensis*) and Cooper's Hawk (*Accipiter cooperii*).

Survey results indicated the presence of a pair of Golden Eagles, however, the surveyor did not find any eagle nests. Therefore, it is expected that the project will not have a temporary or permanent effect on Golden Eagles.

Bald eagles do not use the Victory Ranch project area during the summer, however during the winter, they use areas adjacent to the river channel for roosting and foraging. The construction of roads and houses will remove 5.6 acres of cottonwood trees within the riparian corridor, but it is expected that the tree removal will occur away from the channel and therefore will have only a moderately adverse effect on the Bald Eagle. It is likely that the long-term recruitment and establishment of cottonwood trees along the channel will improve with the river restoration project. Therefore, any adverse effect on the Bald Eagle resulting from the construction of the golf course will be temporary and will be permanently mitigated. The applicant will avoid construction during critical roosting season for the Bald Eagle as described in Mitigation Measure 1b.

A Great Blue Heron rookery exists on a section of the upper reach of the Provo River within the Victory Ranch development. The applicant has agreed to designate a buffer surrounding the rookery in which there shall be no construction of trails or river access points for fishermen. Therefore, it is expected that the adverse effects of this project on the Great Blue Heron will be temporary and minimal in significance.

The Breeding Bird Survey identified the project area as an important breeding area for Sandhill Cranes. Most of the breeding pairs were identified in the upper river reach which will not experience construction activity. Therefore, it is expected that the adverse effects of the project on the Sandhill Crane will be temporary and minimal.

The project area is breeding and stop-over habitat for Cooper's hawks and Red-tailed hawks. It is expected that with the implementation of minimization measures recommended in the Breeding Bird Survey, the adverse effects of the project on these birds will be temporary and moderate in significance.

The larger project area (both floodplain and upland areas) is summer range for deer, elk, moose and sage grouse. It is expected that the project will have a permanent and moderately adverse effect on these species. Although the proposed development is low density with large tracts of open space, the introduction of human and domestic animal disturbance could result in partial displacement of these species over time. The project will also likely have a temporary and moderate effect on these species during construction.

**Endangered or threatened species:** Section 7 consultation was completed on September 24, 2002. The U.S. Fish and Wildlife Service (USFWS) concurred with the Corps' determination that the project will not affect the Whooping Crane (*Grus americanus*), Black-footed ferret (*Mustela nigripes*), or the Canada Lynx (*Lynx canadensis*). The USFWS also concurred with the Corps' determination that the project would not likely adversely affect the Bald Eagle (*Haliaeetus leucocephalus*), Ute Ladies'-tresses (*Spiranthes diluvialis*), and the Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*).

As a result of Section 7 consultation, it is expected that effects of the project to threatened or endangered species will be temporary and minimal.

**Biological availability of possible contaminants in dredged or fill material, considering hydrography in relation to known or anticipated sources of contaminants; results of previous testing of material from the**

**vicinity of the project; known significant sources of persistent pesticides from land runoff or percolation; spill records for petroleum products or designated (Section 311 of the CWA) hazardous substances; other public records of significant introduction of contaminants from industries, municipalities, or other sources:** Only clean fill materials will be used in project development and this office is not aware that any contaminants exist within the project site.

## **V. Human use characteristics and impacts**

**Existing and potential water supplies; water conservation:** Currently, water rights on the property allow for flood irrigation related to agricultural practices. The permittee will apply for a change in use for these water rights so that they can be used to support single family homes. Under these conditions, total water consumption for irrigation and culinary use will be less than current consumption for flood irrigation. Culinary water will be obtained from two wells, one drilled in the river valley and one in Webb Hollow near the southern homesite area. Water will be pumped to storage tanks for culinary use. Water from the Provo River will be pumped to a pond on the Mountain Golf Course for irrigation. Irrigation water for the Lady Long Hollow Golf Course will come from existing water diversions in Webb Hollow.

**Recreational or commercial fisheries:** Recreational fisheries at Victory Ranch are expected to permanently improve as a result of the river restoration portion of the project. However, only resort members will have access to fishing within this reach of the Provo River.

**Other water-related recreation:** The project area is not currently used for other water related recreation. The project will not change this condition.

**Aesthetics of the aquatic ecosystem:** Completion of this project will have a permanent and moderate effect on the aesthetics of the aquatic ecosystem. Existing conditions support a degraded river characterized by excessive downward scour, braided channels, little hydrological connection to its floodplain, few riffle/pool complexes, and little riparian shrubby or woody vegetation. The river restoration project will improve these morphological characteristics and therefore improve the aesthetic of the river. The construction of homes and roads in the river floodplain will change the aesthetics of the aquatic ecosystem from one with few man-made structures and little human disturbance to one with man-made features and perennial human disturbance.

Completion of the project will introduce human and domestic animals to a previously undisturbed area and therefore have a permanent and moderately adverse effect on the aesthetics of the aquatic ecosystem. However, existing conditions support cattle grazing which tramples vegetation and creates erosion, thus contributing to a poor visual experience.

Development in addition to the river valley home sites and the river restoration will occur on uplands outside the scope of analysis of this project. The visual experience near the river will change as a result of this additional development from one unencumbered by homes, roads, and buildings to a landscape of permanent and seasonal residences.

**Parks, national and historic monuments, national seashores, wild and scenic rivers, wilderness areas, research sites, etc.:**

**Traffic/transportation patterns:** The environment affected by the Victory Ranch project includes US40 and SR32 as well as SR 248 at Francis. The applicant provided information (Individual Permit Application for a Golf Course and Fishing Resort on the Provo River above Jordanelle, 2001) which documents that the current Level of Service (LOS) for each of these roads is Level A. Construction may occasionally cause temporary and minor delays on SR 32 of no more than 3 minutes. At total build out of the project, the calculated percentage increase of traffic will not reduce the LOS below Level A on any of the affected roads.

Construction of the development will result in an increase in heavy machinery and truck use on US40, SR 32, and SR 248. This increase in use will be temporary and moderate.

It is expected that the project will have a temporary and minor adverse effect on traffic and transportation patterns.

**Energy consumption or generation:** It is expected that the completion of the project will result in a permanent and minor increase in energy consumption.

**Navigation:** Completion of the work will not affect navigation.

**Safety:** No general safety issues associated with the proposed development have been identified. There will be additional vehicles on SR 32 and the construction of an intersection may result in an increase in traffic accidents. However, the LOS along SR 32 will remain at Level A, which indicates that traffic congestion, waiting times, and resulting safety have been optimized.

**Air quality:** The proposed permit has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed de minimis levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action. Air quality may decrease within the project area and the surrounding Heber and Kamas valleys as a result of increased car and fireplace use within the development.

**Noise:** A temporary increase in noise levels is expected as a result of construction activities during the construction period. A saw mill and gravel pit are currently located adjacent to the project area, therefore, the impact of temporary construction on noise levels is not predicted to be more than minimal relative to baseline conditions. Only minimal permanent changes in noise levels are expected after construction.

**Historic properties (Section 106 National Historic Preservation Act):** The Bureau of Reclamation maintains jurisdiction over the Weber Canal and therefore required an Environmental Assessment for proposed changes to the canal as part of the river restoration. In order to avoid a duplicate effort, the Bureau agreed to oversee Section 106 compliance for its own area of jurisdiction, as well as the Corps' area of potential effect. This area is the project area within the Provo River floodplain. The applicant, in coordination with the State Historic Preservation Office (SHPO) agreed to survey an additional 3,700 acres of property outside of the jurisdiction of the Corps of Engineers and the Bureau of Reclamation.

The applicant conducted an intensive-level sample inventory that resulted in the location, documentation, and resulting report on 41 archaeological sites and 211 isolated finds. Twenty-four of the sites are prehistoric, sixteen are historic, and one has both historic and prehistoric components. The majority of the prehistoric sites are lithic scatters and eleven of them are eligible for the National Register of Historic Places (NRHP). Among the historic sites, trash scatters predominate, but there are three historic farmsteads, one of which is an historic ranch complex. Other historic sites include a portion of a railroad grade, a canal, two isolated bridges, a mine, a quarry, and a site with a wood sweat hut and hearth. Eight of the historic sites are recommended as eligible for the NRHP. The SHPO has concurred that these sites are eligible for NRHP.

The applicant has proposed to remove some of the historic properties and this action constitutes an adverse effect. Consequently, in accordance with 36 CFR 800.6 (c), the Bureau of Reclamation has drafted a Memorandum of Agreement (MOA) among the Corps, Reclamation, the SHPO and the applicant. The MOA is designed to consider the effects of the project on historic properties for the present and future designs. The Larsen Barn Ranch, a historic landmark, will be stabilized and restored according to the Secretary of the Interior Standards for the Treatment of Historic Properties. The project applicant, the SHPO and Reclamation have established criteria and a plan for the restoration and adaptive reuse of the structure.

The BOR invited the Advisory Council on Historic Preservation for comment and signature to the MOA. However, the Council declined the invitation.

**Land use classification:** The project requires no changes to the Jordanelle Basin Land Use plan or the Eastern Summit County General Plan. It does require a conditional use permit from Wasatch County.

**Economics:** Completion of the work will not result in an adverse effect on the area's economy. Once completed, the proposed resort development is expected to have a moderate and positive impact to the economics of Wasatch County by supporting additional staff to operate the resort. The project is designed to keep visitation on-site and will therefore not promote the purchase of goods within the surrounding community. The resort may purchase its supplies from the surrounding community and therefore it may contribute to additional sales within the Kamas and/or Heber Valleys.

**Prime and unique farmland (7 CFR Part 658):** No such areas will be affected by work completion.

**Food and fiber production:** An area grazed by approximately 350 cattle and 2700 sheep will be removed from production. The removal of this resource will not have a more than minimal effect on food and fiber production in the area.

**General water quality:** Aside from the minor water quality impacts noted above, general water quality will not be affected by work completion.

**Mineral needs:** While completion of the work will require certain quantities of products such as sand and gravel, overall impacts on mineral supplies will be minor and temporary.

**Consideration of private property:** The property is owned by the applicant, Mr. Robert Larson. The completion of the proposed project will be promoted by the issuance of a Regulatory permit and will allow the owner to use the property in the manner determined to be most beneficial.

**VI. Summary of secondary and cumulative effects:** Overall, the project will not contribute to adverse secondary impacts within the project area. However, the project will moderately effect the distribution of wildlife in the area and heavily impact the open space character of approximately 3,000 acres. The presence of construction crews and equipment will temporarily displace wildlife normally using the project area and will likely permanently displace this same wildlife once the project is fully constructed. The project will introduce humans and motorized equipment to both developed and undeveloped areas within the project area through the construction of roads and trails. However, the applicant has committed significant resources to implement measures that will minimize this effect. These measures include the avoidance of sensitive wildlife areas in trail construction and fisherman access points, the restoration of fish habitat within one mile of the Provo River, the sponsorship of wildlife surveys to determine effects of the project on wildlife and the elimination of approximately 5,000 acres from project development.

Cumulative effects are the direct and indirect effects of a project when they are added to other past, present, and reasonable foreseeable actions, regardless of who carries out the action. The Heber and Kamas Valleys encompass the geographical areas that will be most affected by the completion of the proposed work. The primary cumulative actions affecting water resources include past, present and future growth of these valleys and uses of the land surrounding the valleys.

The Heber and Kamas valleys were settled in conjunction with the settlement of the Wasatch Front in the mid-1850's. The population grew minimally prior to 1980, and then grew quickly in response to the growth in adjacent Park City. Today, the Heber and Kamas valleys are utilized for primarily recreation and leisure. The mountains surrounding the valleys have been historically used for mining, summer grazing range and timber cutting. The Forest Service owns lands surrounding the Provo River from its headwaters in the Uinta Mountains to the forest boundary near Woodland. Residential subdivisions have increased within the valleys and the foothills of the mountains.

Growth of these areas has resulted in the conversion of land from grazed or undisturbed vegetated soil and farmland to landscaped yards, recreation areas, gravel, or paved surfaces. This type of change in land cover results in reduced infiltration rates and increased surface runoff generation. These hydrologic changes have the potential to cause increased erosion and sediment delivery to the Provo River and its tributaries as well as reduced aquifer recharge and base line flows. Project features such as detention ponds and buffers between housing and aquatic features will minimize or eliminate increased runoff and sedimentation into the drainage. The elimination of grazing and livestock within the Provo River floodplain will reduce nitrogen inputs, trampled riparian areas, and sedimentation as well. The river restoration project will recreate a hydrological connection between the river and its floodplain by eliminating dikes and creating adjacent wetlands. This action will likely be effective in maintaining or enhancing existing aquifer recharge. The creation of 4.0 acres of wetlands will likely have a similar effect on both aquifer recharge and baseline flows.

The conversions of agricultural lands to residential housing is increasingly more common in Summit and Wasatch Counties. The gradual loss of agricultural lands is directly related to the State of Utah's increased reliance on outside food sources (both outside the state and outside the country). Over time, if the trend continues to replace agricultural lands with non-agricultural lands, the state of Utah will be less able to provide its own food supply and will rely more on outside sources.

The cumulative effects analysis area for wildlife and aquatic life is limited to the upper Provo River drainage; however, it could extend into other regions for some wide-ranging species such as migratory birds. As described within the secondary impacts analysis, the distribution patterns of wildlife on the subject property may change moderately due to the presence of humans and motorized equipment. Adjacent undeveloped lands, including upstream Forest Service property, will likely experience increased wildlife use as a result. The heavy population increase in the Heber Valley and associated land development, in addition to this project, will have a steady moderate effect on wildlife populations and distribution. The applicant has attempted to minimize this potential negative effect by restricting housing development to half of the available property and creating habitat for sensitive wildlife species such as the spotted frog.